

DoD PLCS Meeting

Arlington, USA

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UK MoD Implementations of PLCS & Lessons Learned

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Scope

- Introduction
- PLCS Implementation projects
 - Air
 - Sea
- Lessons learned

Introduction

- Commitment to STEP & PLCS
- Contribution to development of PLCS as a standard
- Strategic involvement in UK MoD application of other STEP Application Protocols
 - AP233 (Systems Engineering)
 - AP224 (Process Planning using machining features)

AP215 AP216 AP218 & AP227 (Ship

PLCS and LITS

(Logistics Information Technology System)

Managed by

RAF / D Log Strike



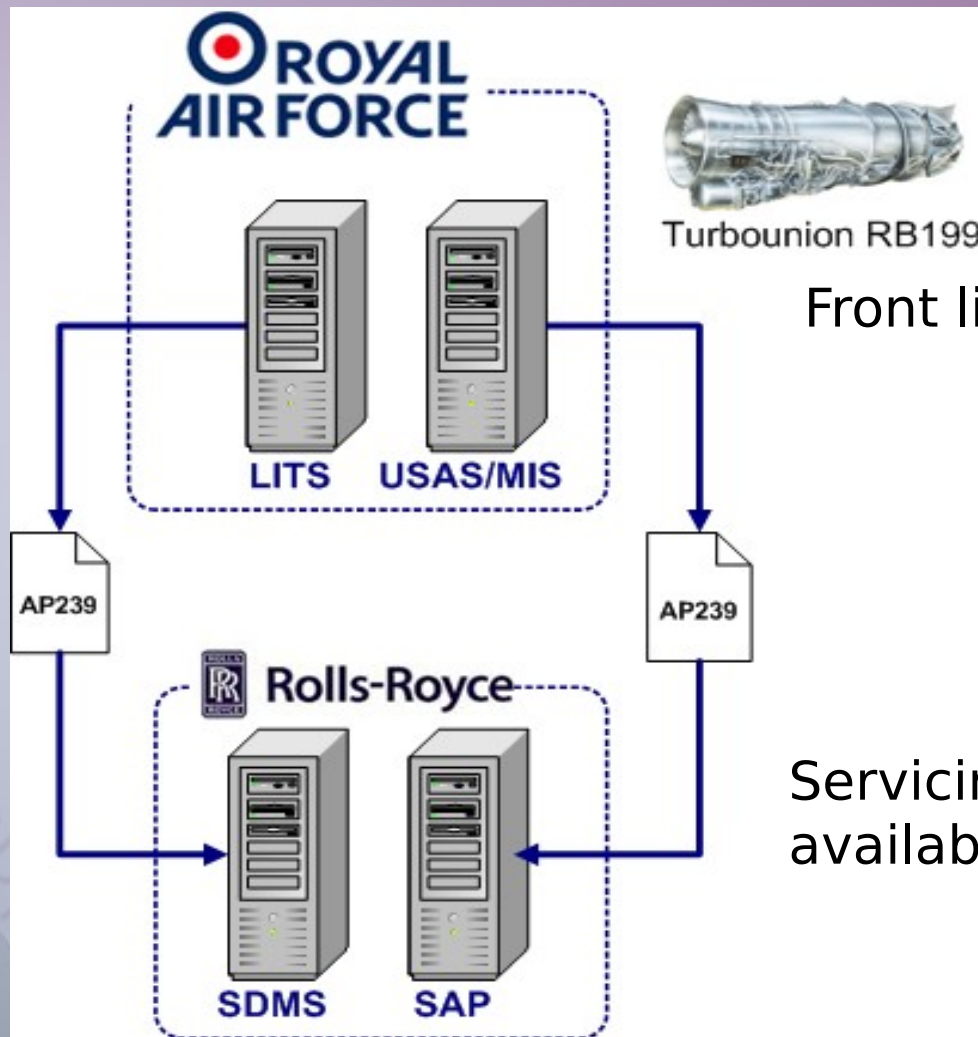
Changing support contracts

- D Log Strike has passed full responsibility for the availability of RB199 engines to Rolls Royce
- The RAF still responsible for recording:-
 - All maintenance and engine usage information
 - Spares consumption information
- Rolls Royce need this data to meet their responsibilities under the contract
- Currently the RAF send nightly messages:
 - from LITS to the RR Service Data Manager system (SDM)
 - From USAS/MIS to the RR ERP system

PLCS Strategy

- DLO strategy is to use PLCS for exchange of logistics information
- Rolls Royce also developing a strategy to use PLCS
- Both partners are planning to use feedback of data on the Rolls Royce RB199 engine as a PLCS pilot
- D Log Strike then hope to apply a similar approach, using the same message set, with other suppliers, such as BAE Systems and Boeing.

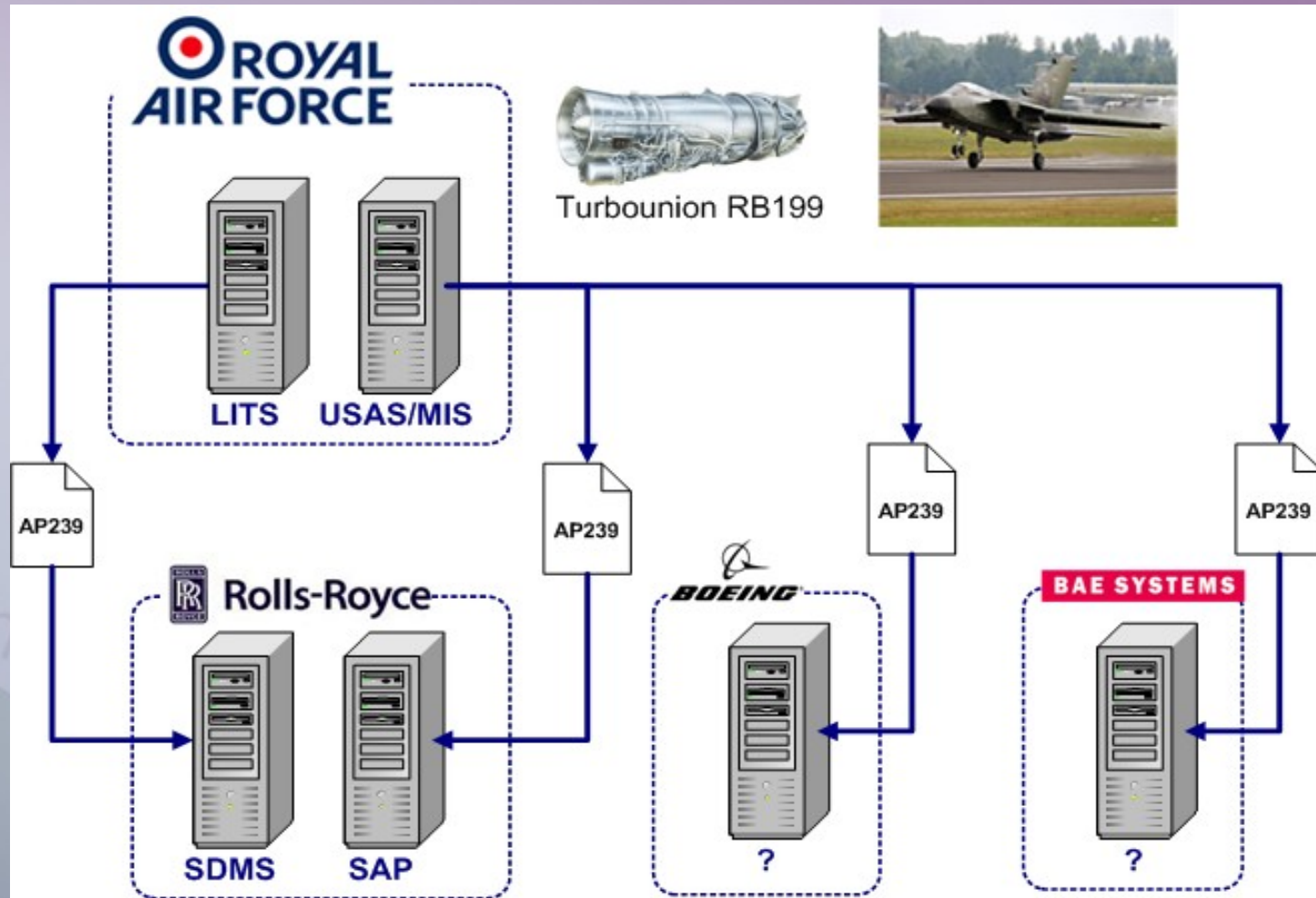
Current scope



Front line maintenance

Servicing and
availability management

Future scope



Business drivers/benefits

- Automation of the current exchange process using ISO-10303-PLCS will:
 - Improve the quality and completeness of the information exchange
 - Reduce time to collate and process the information exchanged
 - Improve the accuracy of feedback data available to the engine maintainers
- Use of an ISO standard will reduce the costs in extending this feedback mechanism to accommodate new contracts
- The availability of a standard export format will “future proof” the legacy RAF systems
- The work supports MoD policy to use the PLCS standard when contracting for logistics information

PLCS Implementation in LITS

- Work completed to date:-
 - In depth scoping study
 - High level mapping from LITS and USAS MIS to PLCS
 - Used existing PLCS capabilities and templates
 - Specified next stage of the development process
 - Details the requirement for new PLCS capabilities and templates

PLCS Implementation in LITS

- Project Work Planned:-
 - Develop detailed business mapping
 - Complete required PLCS capabilities and templates
 - Define data exchange architecture
 - Test the translator
 - Implement and deploy

PLCS and UMMS

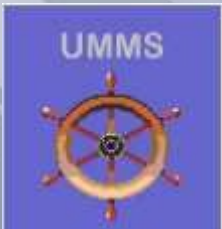
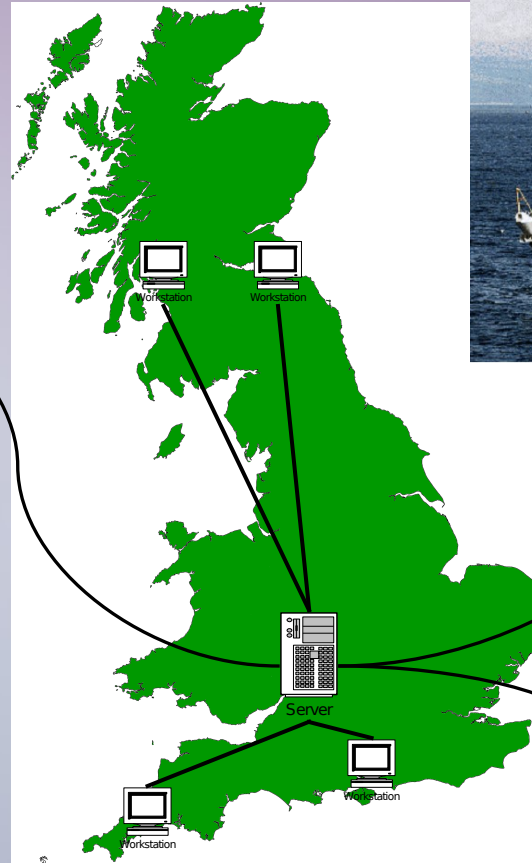
(Unit Maintenance Management System)

Managed by

RN / D Log Fleet



Unit Maintenance Management System



UMMS Functions

- UMMS is the next generation Naval Maintenance Management support solution for afloat and ashore, supporting S/S and S/M environments.
- UMMS holds:
 - a copy of the Ship Fit Definition (configuration)
 - a copy of the RCM analysis records
 - a library of upkeep tasks
- UMMS controls a scheduler to plan :
 - Condition monitoring tasks (calendar based)
 - Remedial task (as required 'on condition')

UMMS Features

Job Number

Job Title


Resource Requirements

Warnings and Precautions

Job Method

Work Allocation

UMMS - Work Package Job Information Card

 **Ship** HMS OCEAN

Task Title 240 Volt Distribution Cable - Renew defective cable.

Job Number OCEAJB000003707

Work Package OCEAN-GS-FTSP1

Interval 18/06/04 **Scheduled End Date** 05/08/05 **Current Job Status** Allocated **Assigned To** PIMMS

FMS **MCP No** 6 **Priority** 2 **Work Unit No**

Applies to Assets **Functional Description** **Local No** **Accref** **Compl** **yr**

PRIMARY SUPPLY SYSTEM JEAC010004APR05 01H ☐

PRIMARY DISTRIBUTION SYSTEM JEBC010007DEC06 99 ☐

Analysis Title To Distribute 240 Volts **Node Reference Number** 441

Failure Mode Circuit insulation age degrades.

Category Cat A - Can be undertaken by Ship's Staff

SKILLS AND TIME REQUIRED TO DO TASK **RELATED HANDBOOKS**

Skill **No.** **Time Required**

Mechanic 1 4 Hours

RELATED MAINTENANCE

NAVAL STORES

SPARE GEAR

Part Number **Part Description** **Quantity**

0961-995218289 Cable (15A) 1

TOOLS

SAFETY PRECAUTIONS

- 1 ALL PERSONNEL ARE TO COMPLY WITH THE REQUIREMENTS OF THE HEALTH AND SAFETY AT WORK ACT 1974 AND WORK TO ANY REGULATIONS MADE BY THE SECRETARY OF STATE UNDER POWERS CONFERRED ON HIM BY THE ACT AND COMPLY WITH ANY LOCAL HEALTH AND SAFETY INSTRUCTIONS OR PROCEDURES.
- 2 **ELECTRICAL:**
A CURRENT OF 100mA PASSING THROUGH THE HUMAN BODY FOR 1 SECOND CAN KILL. THIS CAN OCCUR AT VOLTAGES AS LOW AS 50V AC OR 50V DC. WHENEVER PRACTICABLE BEFORE CARRYING OUT MAINTENANCE OR REPAIR, PERSONNEL MUST:
1) ISOLATE EQUIPMENT FROM ELECTRICAL SUPPLY
2) MAKE TESTS TO VERIFY THAT ISOLATION IS COMPLETE
ENSURE POWER CANNOT BE ACCIDENTALLY RECONNECTED

JOB DETAILS

- 1 Tagout and isolate supplies in accordance with BR2000 (20).
- 2 Disconnect cable from fixtures and fittings and from destination.
- 3 **CAUTION:** Where the cable has to pass through a sealed bulkhead or a gland, then the bulkhead or vessel etc might well have to be pressure tested to ensure that the seal is maintained.
- 4 Run the new cable through, but prior to connecting it at either end an insulation check should be made.
- 5 Connect cable at both ends (equipment and fixed).
- 6 Carry out insulation resistance test.
- 7 Remove Tag out and restore power supplies.

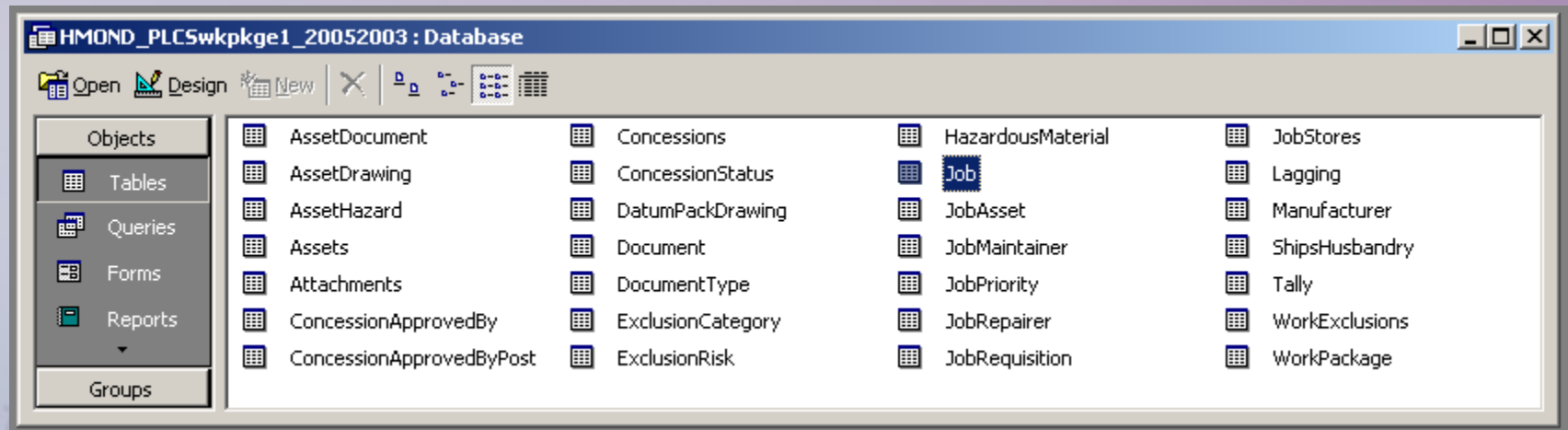
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Work Package Compilation

- UMMS holds details of all non-completed jobs within its scheduler.
- The Support Manager assigns the job to an appropriate organisation for execution :
 - Ship's staff
 - Base staff
 - Dockyard Contractor
- Packages of work are then compiled for Base Staff and Contractor Support to be managed externally
- UMMS is then able to export these Work

UMMS Work Package Export



- Work Package compiled by adding information from Job Information Card into database form

UMMS / AP 239 Mapping

Job

Name	UMMS Mapping	Description	PLCS Module	PLCS Entity	PLCS Attribute	Mapping	Notes
Priority	SELECT Priority FROM JobRequisition WHERE EXISTS (SELECT 'x' FROM Job j WHERE j.JobID = r.JobID)	Priority of Defect Job. List of codes to be used requires standardisation.	Class Classification_assignment	Class Classification_assignment	name	Classification_assignment.items[i] -> Activity Classification_assignment.assigned_grouping -> Class {Classification_assignment.role = 'Priority'} {Class.id = ''} Class.name	
Job Description	Job.JobText	Where Task ID does not point to JIC? and/or Defect description	Activity	Activity	description		
Job Classification	Job.S340Starred = Starred/SE, Job.JobS340Mandatory = Mandatory/OP Values 0 OR -1	Starred, Mandatory, SE / Op. A coding system will be required to be agreed.	Class Classification_assignment	Class Classification_assignment	name	Classification_assignment.items[i] -> Activity Classification_assignment.assigned_grouping -> Class {Classification_assignment.role = 'Job Classification'} {Class.id = ''} Class.name	

- Extract from early stages of the project where legacy data elements were mapped directly to PLCS entities & attributes

PLCS Implementation in UMMS

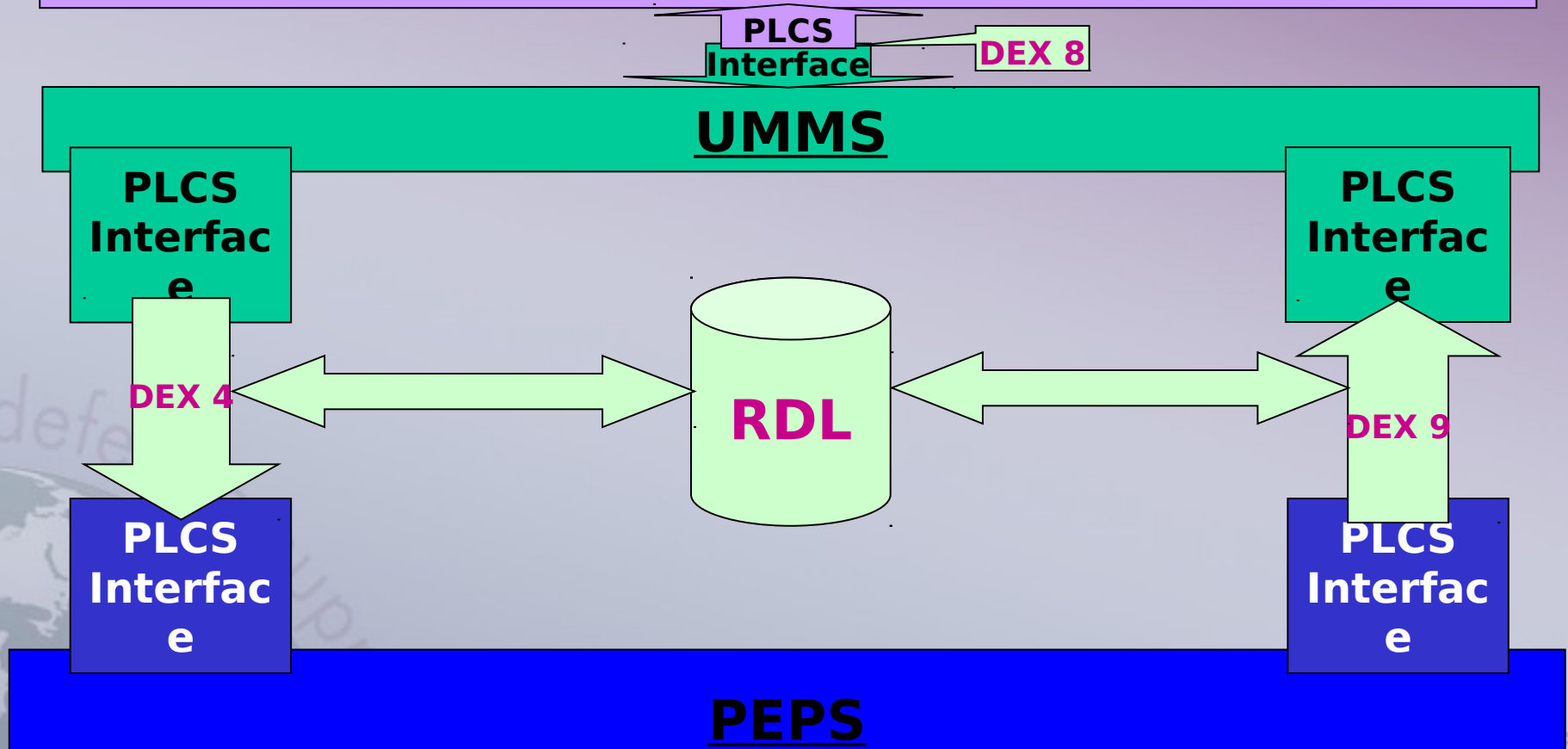
- Work completed to date:- :
 - Mapping of the existing UMMS export data set to the AP239 data model
 - Development of an XML based architecture to implement an AP 239 compliant exchange
 - Embedding the new PLCS capability into the UMMS application
 - Building matching PLCS capability into the Devonport Dockyard ERP System (PEPS)

PLCS Implementation in UMMS

- Work in progress :-
 - Development of a Reference Data Library and RDL Service in support of the exchange
 - Revision of the existing mapping to reflect the newly developed Work Package Definition Data Exchange Specification (DEX 4)
 - Development of an architecture to implement the PLCS DEX and RDL compliant revised interface

Planned Future Support Environment

SSDD / SDD



Implementation - Lessons Learned (1)

- Identification of quality issues
 - Poor data quality within legacy systems may be exposed
 - Inefficient and nugatory business processes may also be highlighted
- Project scope drift
 - People like what they see – tight control should be maintained !
- Requirement for specialist knowledge
 - Business domain / subject matter expertise
 - PLCS activity model, PLCS data model and DEX construction
 - Emphasises the requirement for creation of standardised DEXs and Capabilities

Implementation - Lessons Learned (2)

- Creating a DEX in isolation from the business is not sensible
 - Where are the boundaries?
 - When have you identified all of the reference data?
 - How do you know when you've finished?
- Piecemeal implementations are slow
 - Good for trying out the standard and gaining confidence and buy-in
 - Better to implement strategically on a wider scale
- You have to be in it to win it!
 - Role of 'Intelligent Decider' within standards development community to be able to influence direction of development
- PLCS/AP239 does work but interoperability still needs proving
 - The standard 'does the job' but we still need to establish some means of interoperability testing before we know the job is finished



Any Questions?